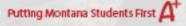
GEMS Data Use and Research

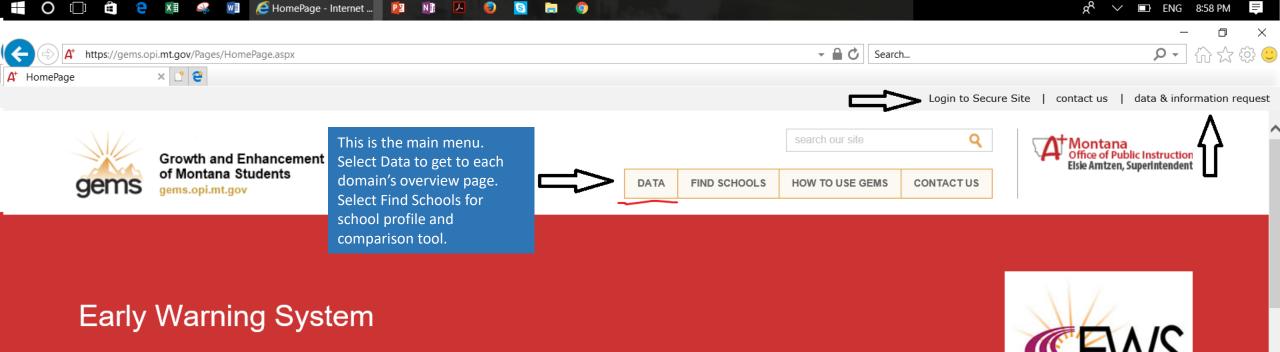
Robin Clausen
Stakeholder Liaison and Research Analyst
Montana Office of Public Instruction
2020 Assist Conference (OPI)



What first steps do researchers take in a study?

- They come to research with a question, sometimes ill defined, that defines the scope of the investigations and what data is needed.
- It helps, as a second step, to understand the data available to you.
 - GEMS is a frequently used data source for district users and the general public.
 - School level and Student level data is provided to OPI by schools. GEMS provides that
 data back to schools in a way that helps you better understand the data available to
 you.
- To get secure access to student level data (district users), email Robin Clausen @ robin.clausen@mt.gov.
- If you already have secure access feel free to follow along on your laptop or tablet. https://gems.opi.mt.gov.





The Montana EWS model uses readily available school, student, and other live data to identify students who are at risk of dropping out of school. Students are identified as early as 6th grade so that action may be taken by school officials.







Montana's Statewide Longitudinal Education Data System

Welcome! This data reporting system provides access to multiple years of data and interactive reports on student achievement,

Resources

We provide schools, policy makers, parents and the public with unprecedented access to data and reports regarding Montana's public education system. Here are some resources to help guide you through GEMS. Please visit our Training Center for a complete set of our helpful resources.





Sign in with your organizational account

Password		

Sign in

If you experience access problems contact the security administrator.

To change your password click Here



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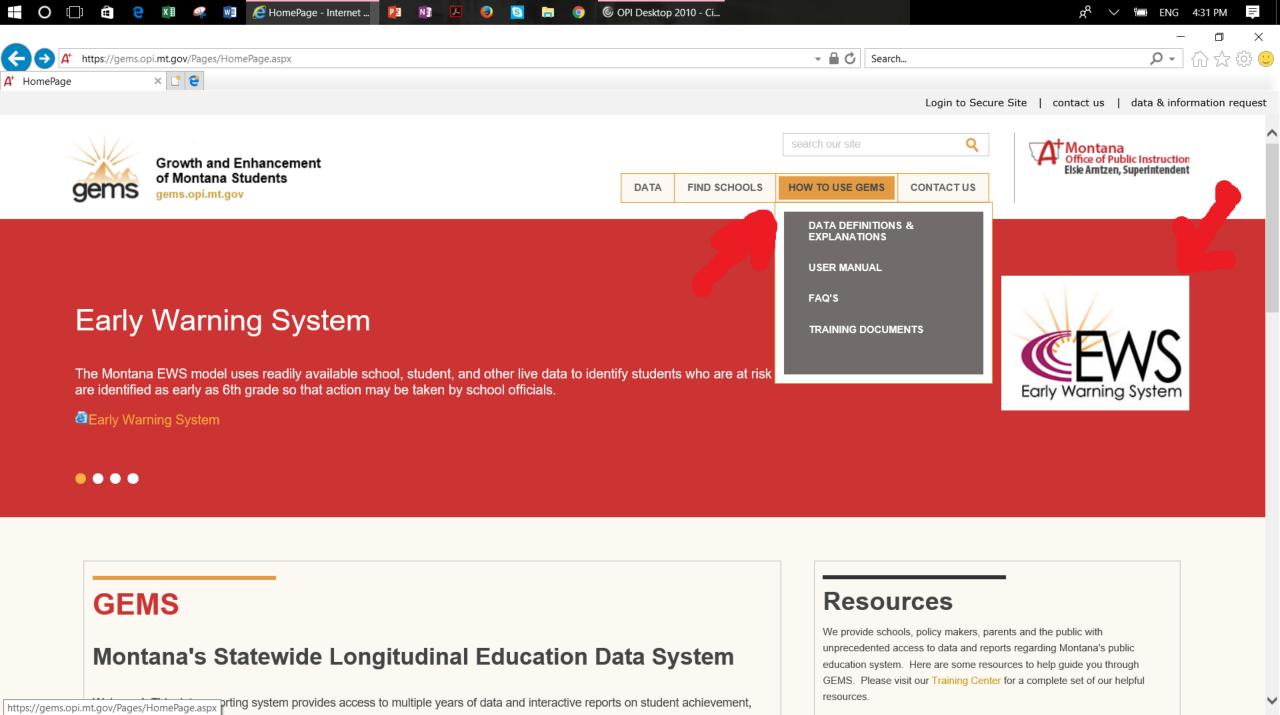
Growth and Enhancement of Montana Students

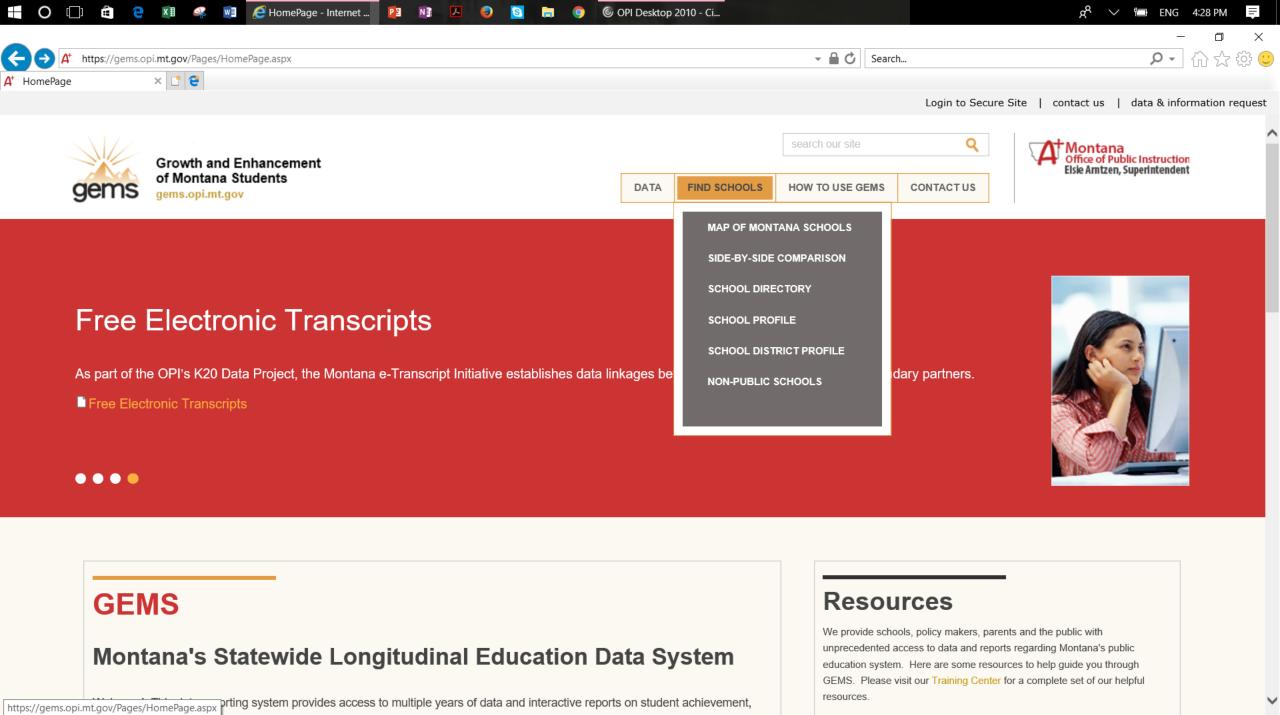
DATA REQUEST FORM

Click 'Submit' to Send this Form to the Measurement and Accountability Division

There are many pre-existing files on the OPI Web page showing enrollment counts, graduate and drop out data, AYP report cards, and program participation. Please use this form for data sets which are not posted on the web page. Fill the form out to the best of your knowledge and allow at least one week for prioritization. Completion date will be determined by OPI staff. The staff member assigned to this request will contact you for further information.

Requestor:	Title:	Phone:
Org Div:	Address:	
Email:	Date Submit:	Date Needed:
DESUMED IN DETAIL THE OUTH VOIL OF	e requestina, include additional information that a	describes the purpose of the data request and how the data
will ultimately be used. Be as specifi		
will ultimately be used. Be as specifi Intended Audience: Formal Request (publish or sha	ic as possible.	





Side-by-Side Comparison

You can compare any schools or districts throughout the entire state of Montana. To begin, just select a school or district from the dropdown list and click 'Add'. To remove any school or district, just click 'Remove'. To clear your list (i.e., start over) or return to the map tool, click on the appropriate link below:

Belgrade Elem
Belgrade, MT
View Profile

Remove

Livingston Elem
Livingston, MT
View Profile

Remove

Add a School/District Remove items from list to switch between schools / districts

School ● District

Select a District

Add

Clear Your List

Return to the Map

Statewide Assessments

School/District Characteristics

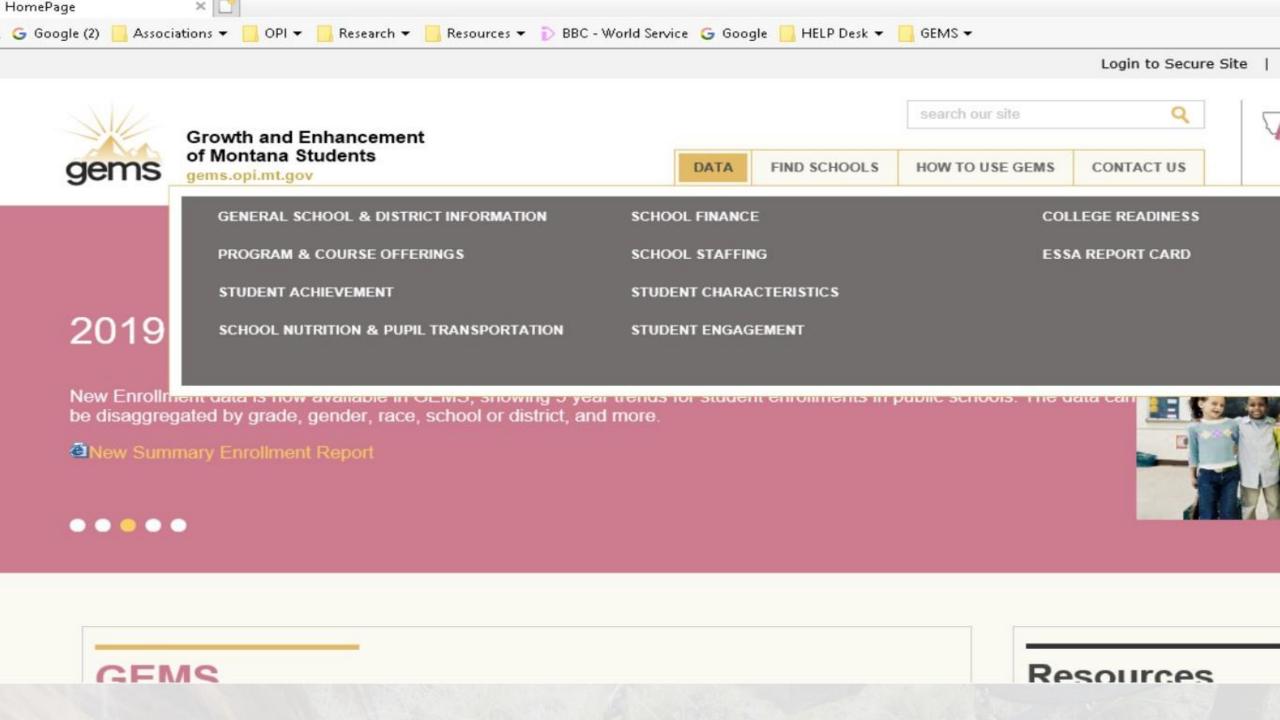
Program & Course Offerings

Financial

Data Definitions & Explanations

Statewide Assessments - Percent of Students Meeting or Exceeding Standards

Grade/Subject	Belgrade Elem	Livingston Elem
3rd Grade - English Language Arts	50	
(ELA)		
All Students (Including ELL and Sp Ed)	59.11%	35.94%
Male Students	50.83%	34.72%
Female Students	65.77%	37.50%
American Indian/Alaskan Native	*	*
Asian	*	*
White	61.83%	36.04%
Black/African American	*	*
Hispanic	*	*
Multi-Racial	*	*
Native Hawaiian/Pacific Islander	*	*
Students Eligible for Free or Reduced Lunch	42.57%	23.81%
Students served in Migrant Program	*	*
Special Education Students	*	*
English Language Learners	*	*



This is the data menu. By selecting the icon you will be given a list of available datasets in the School Finance Domain.

School Finance

Here you'll find demographic and financial information about public school districts in Montana. You'll also find county fiscal data and grant information.

School Budget Reports include data compiled from annual final budgets, including: mill levies by fund, anticipated revenues by fund, and adopted budgets for each school district.

Trustees Financial Summary Reports includes annual revenues and expenditures reported by school districts.

Per Pupil Information Reports includes per student revenues and expenditures as defined by the state of Montana.

County Finances Reports includes revenues and disbursements from the countywide funds for schools, including the county equalization funds, county transportation fund, and the county retirement funds.

Frequently-viewed reports include:

- School Budget Dashboard
- Reported Revenues by School District
- · Reported Expenditures by School District
- Per Pupil Revenues
- Per Pupil Expenditures
- · County Transportation and Retirement Mills Levied





search our site DATA FIND SCHOOLS HOW TO USE GEMS CONTACT US

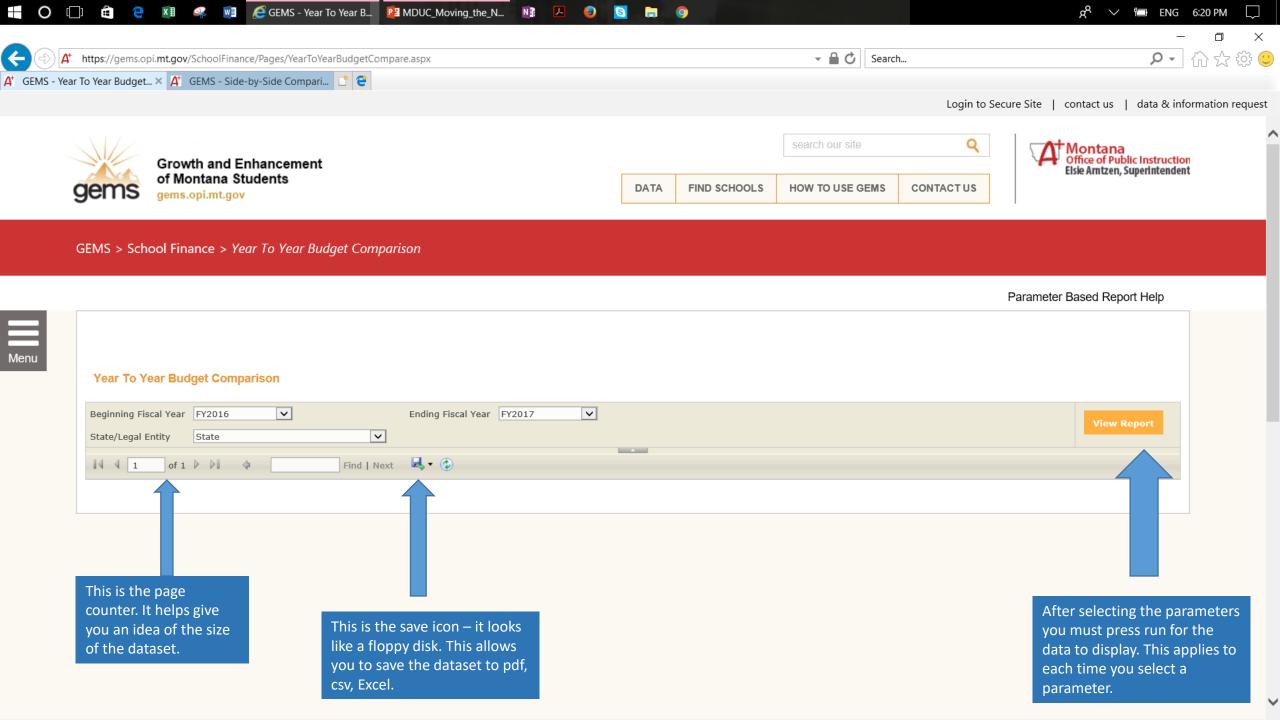


State & Federal Grants



Overview School Finance Overview List of Quick Facts nformation about public school districts in Montana. You'll also find county fiscal data and grant information. School Budget Reports ed from annual final budgets, including: mill levies by fund, anticipated revenues by fund, and adopted budgets for each School Budget Dashboard Year to Year Budget Comparison les annual revenues and expenditures reported by school districts. General Fund Recap student revenues and expenditures as defined by the state of Montana. Count of School Districts by Equity Status s and disbursements from the county-wide funds for schools, including the county equalization funds, county List of School Districts by Equity Status ent funds. Fund Balances Limitation Flexibility Fund Balance Limitation Trustees Financial Summary Reports District ool District - Per Pupil Information Reports irement Mills Levied





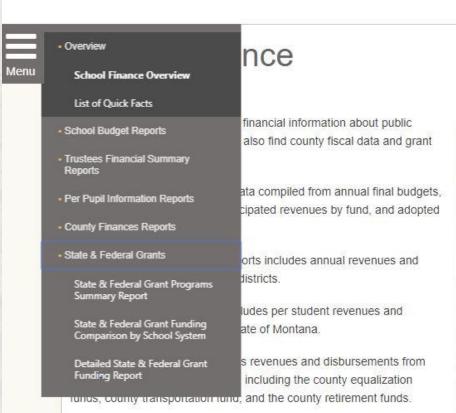
FIND SCHOOLS HOW TO USE GEMS

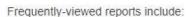
DATA

CONTACT US



GEMS > School Finance

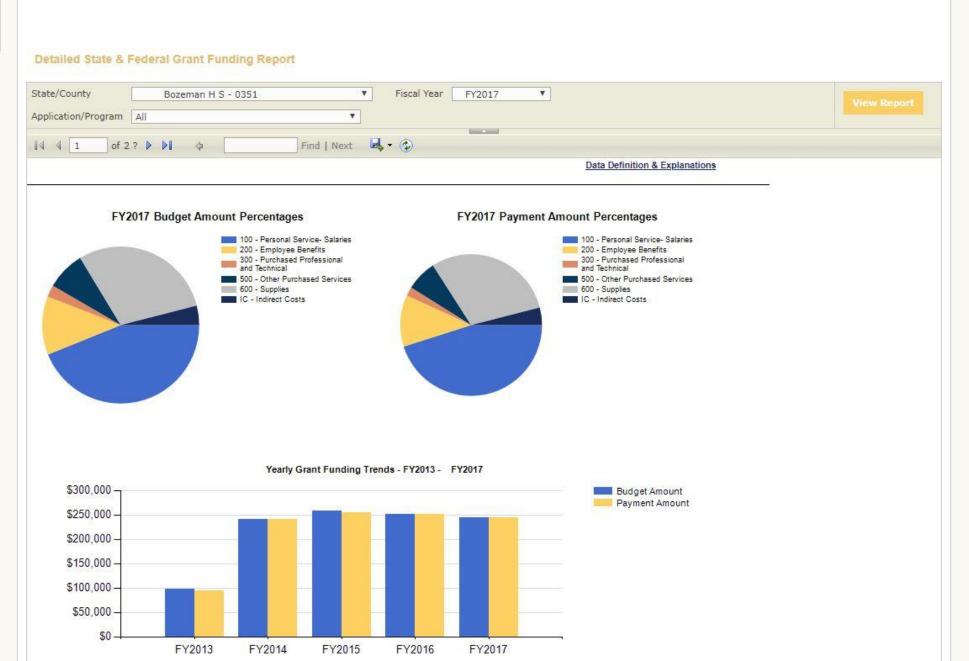


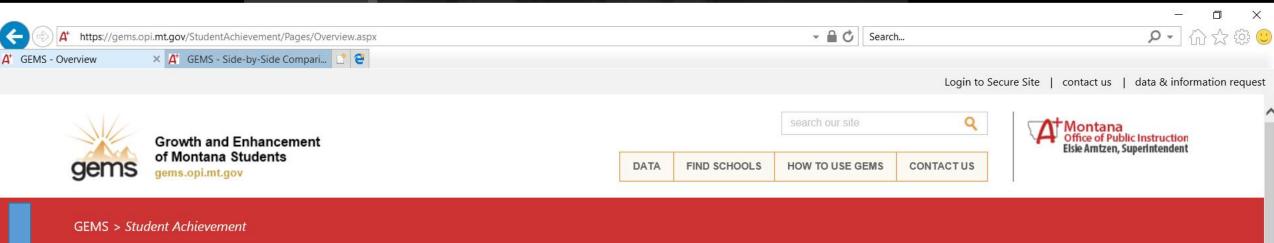


- · School Budget Dashboard
- · Reported Revenues by School District
- · Reported Expenditures by School District
- · Per Pupil Revenues
- Per Pupil Expenditures
- · County Transportation and Retirement Mills Levied













Student Achievement

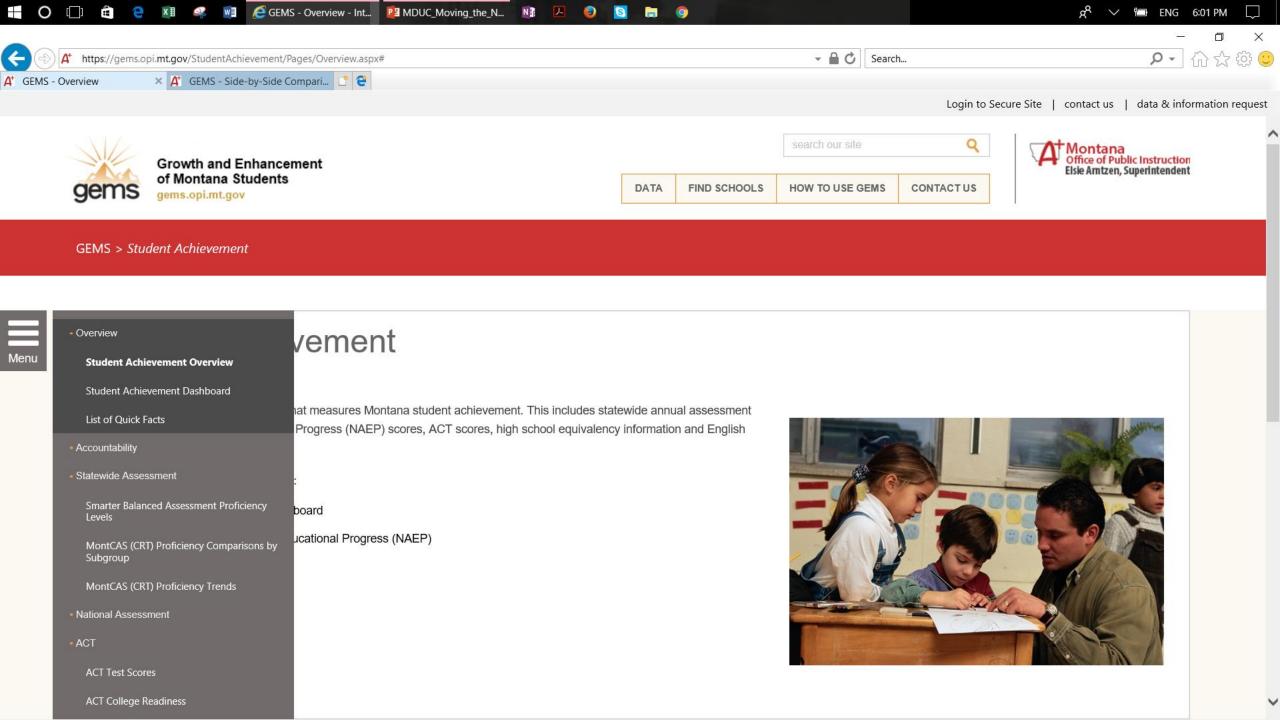
Here you'll find a variety of information that measures Montana student achievement. This includes statewide annual assessment data, National Assessment of Education Progress (NAEP) scores, ACT scores, high school equivalency information and English language proficiency data.

€ GEMS - Overview - Int... B MDUC_Moving_the_N... N

Frequently-viewed reports include:

- Student Achievement Dashboard
- · Statewide Assessment
- National Assessment of Educational Progress (NAEP)
- ACT Test Scores



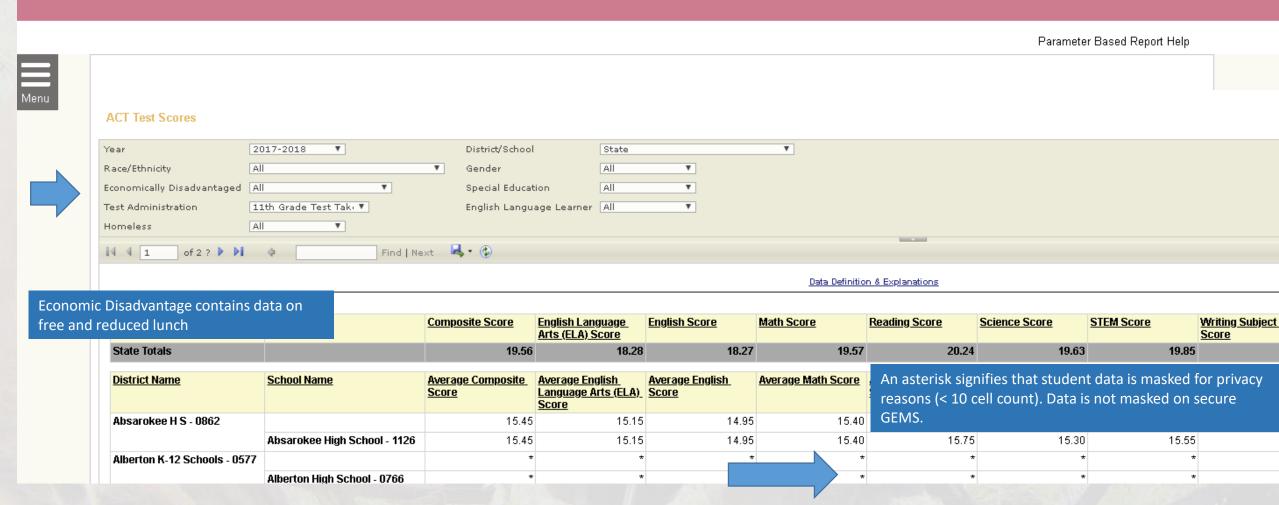




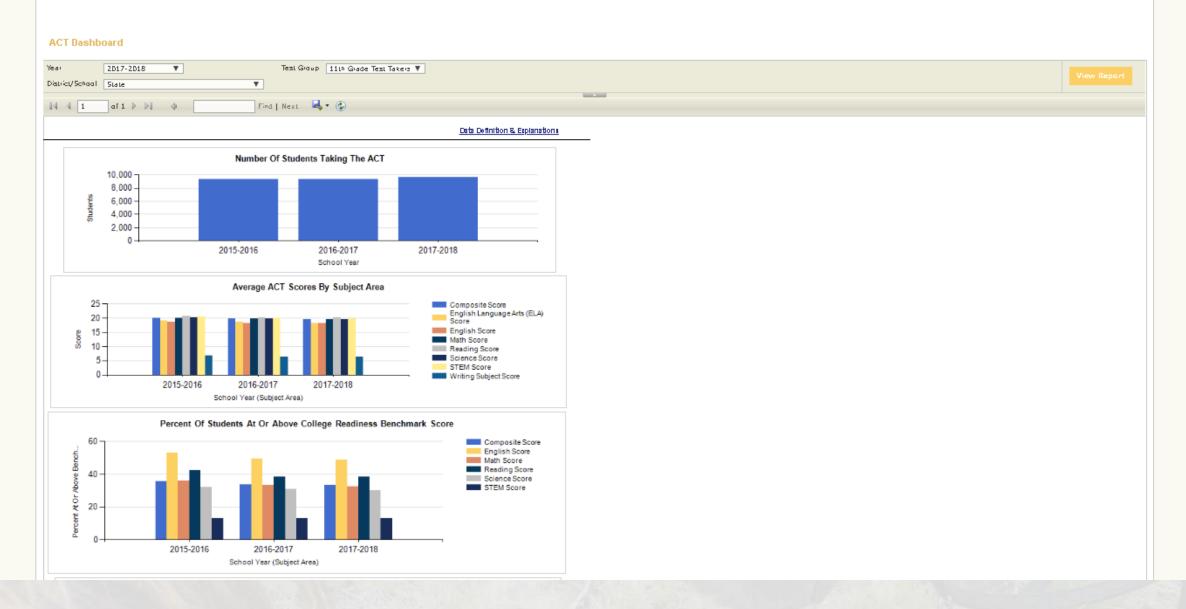




GEMS > Student Achievement > ACT Test Scores







Smarter Balanced Assessment Proficiency Levels

Year	2018-2019 ▼	District/School	Helena Elem - 0487 ▼	View Report
Race/Ethnicity	All ▼	Gender	All V	The state of the s
Economically Disadvantaged	All ▼	Special Education	All V	
Grade	All 🔻	English Language Learner	All V	
Assessment Content Area	English Language Arts (ELA ▼	Assessment Type	All V	
14 4 1 or 1 > >	↓ ↓ Find Next 🖳	,* (
			Data Definition & Explanations	

		Advanced Count	Advanced Percent	Proficient Count	Proficient Percent	Nearing Proficient Count	Nearing Proficient Percent	Novice Count	Novice Percent	Not Tested Count	Total Participation Rate
State Totals		12,920	18.9%	21,233	31.1%	16,508	24.2%	17,580	25.8%	1,279	98.2%
<u>District Name</u>	School Name	Advanced Count	Advanced Percent	Proficent Count	Proficient Percent	Nearing Proficient Count	Nearing Proficient Percent	Novice Count	Novice Percent	Not Tested Count	Total Participation Rate
Helena Elem - 0487	-	765	22.4%	1150	33.6%	768	22.5%	737	21.5%	104	97.0%
	Broadwater School - 0655	30	20.8%	32	22.2%	33	22.9%	49	34.0%) *	97.3%
	Bryant School - 0657	11	9.5%	31	28.7%	30	25.9%	44	37.9%	100	94.3%
	C R Anderson Middle Schl - 1615	199	20.4%	399	40.9%	225	23.1%	152	15.6%	36	96.4%
	Central School - 0654	34	28.3%	31	25.8%	28	21.7%	29	24.2%		95.2%
	Four Georgians School - 1582	68	28.5%	69	28.9%	60	25.1%	42	17.6%	8.*	96.8%
	Hawthorne School - 0656	33	32.4%	35	34.3%	17	16.7%	17	16.7%	0.5	100.0%
	Helena Middle School - 1614	113	17.3%	241	37.0%	163	25.0%	135	20.7%	32	95.3%
	Jefferson School - 0651	67	48.2%	43	29.7%	23	15.9%	12	8.3%		98.6%
	Jim Darcy School - 1461	58	25.1%	63	28.3%	45	20.2%	59	28.5%	100	99.6%
	Kessler Elementary School	27	18.5%	37	25.3%	32	21.9%	50	34.2%		100.0%

DATA FIND SCHOOLS **HOW TO USE GEMS**

CONTACT US



GEMS > Student Characteristics



Student Characteristics

Here you'll find data on Montana's graduation and dropout rates by school or district over time. You can also search through enrollment data by school or grade.

You'll find information on special education students, which includes district performance reports and trends.

Including disaggregation for Migrant Students, Limited English Proficient Students, and Homeless, Neglected, and Delinquent Students.

Frequently-viewed reports include:

- · Student Characteristics Dashboard
- · Graduation Dashboard
- · Dropout Dashboard
- Graduation Matters Montana: Your Community Fact Sheet
- Special Education Child Count Dashboard
 Indian Education Enrollment

Facts & Publications

· 2017 Facts about Montana Education



CONTACT US

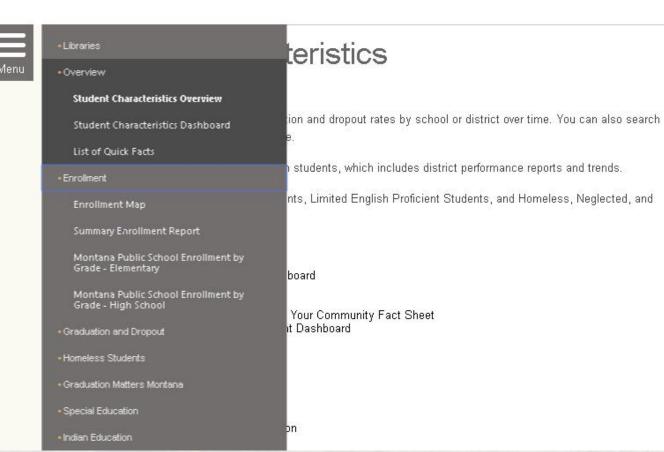
HOW TO USE GEMS

DATA

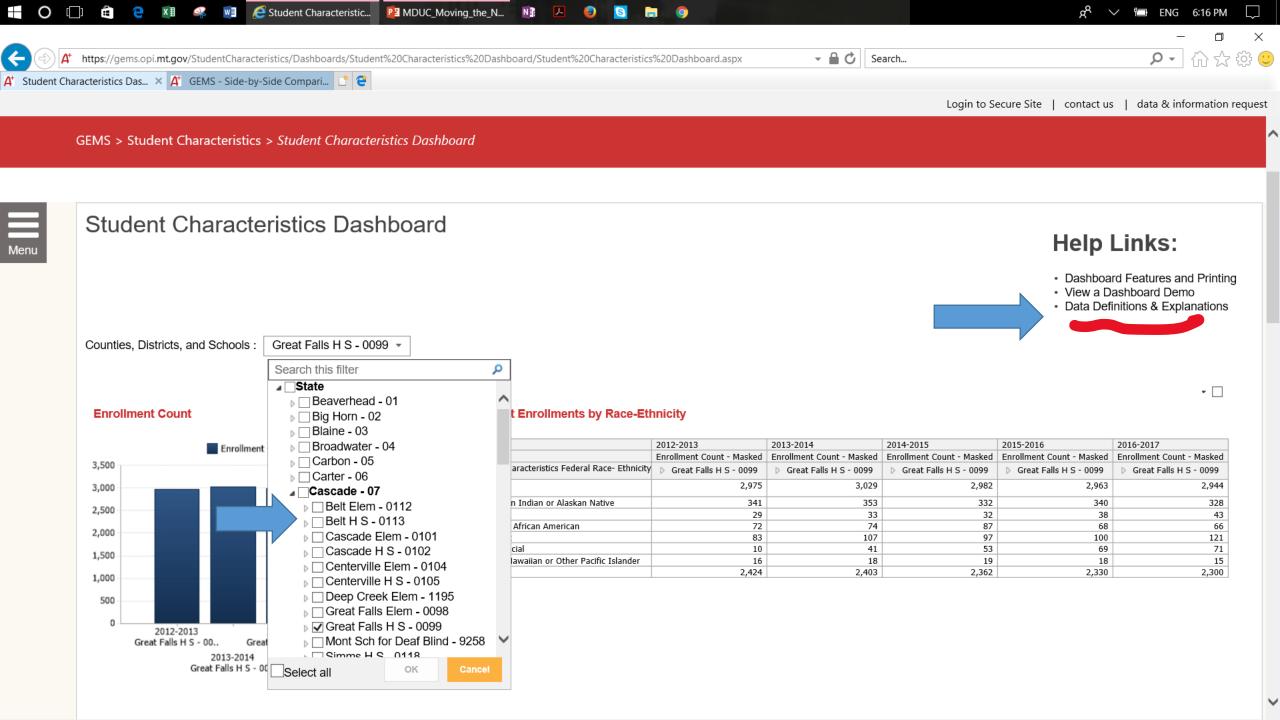
FIND SCHOOLS



GEMS > Student Characteristics



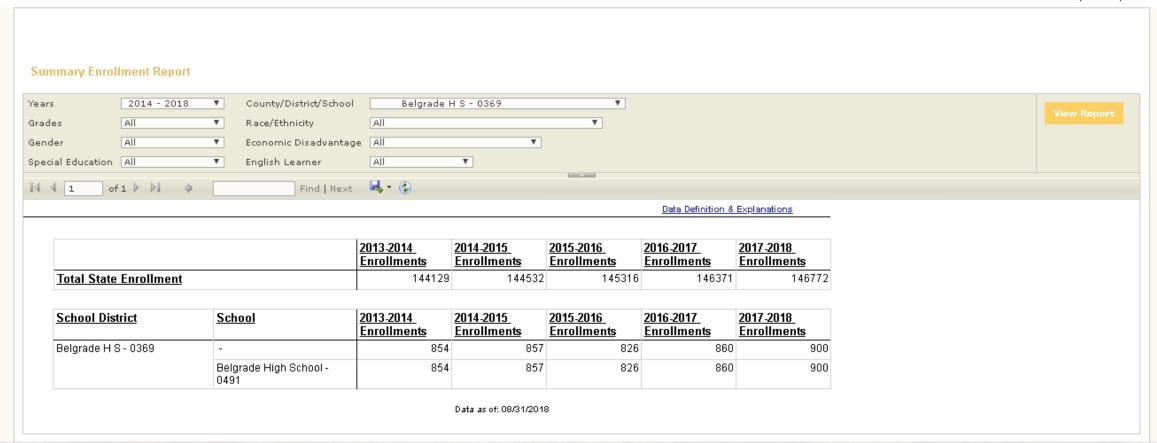






GEMS > Student Characteristics > Summary Enrollment Report

Parameter Based Report Help

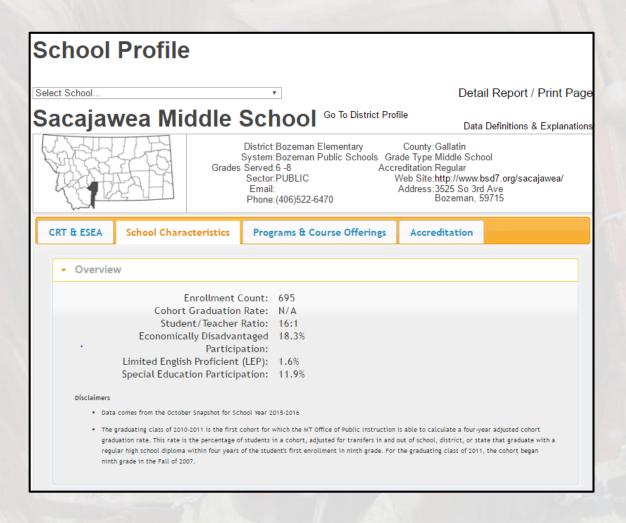




Questions?

- This presentation touches the surface as to what's in GEMS. It shows you how to use it well. You can discover what GEMS offers. For example, has anyone thought of a research question?
- The next portion of this presentation will cover five scenarios where you could use GEMS.

Before you visit, click it! Know more about the schools you visit and compare them to others.



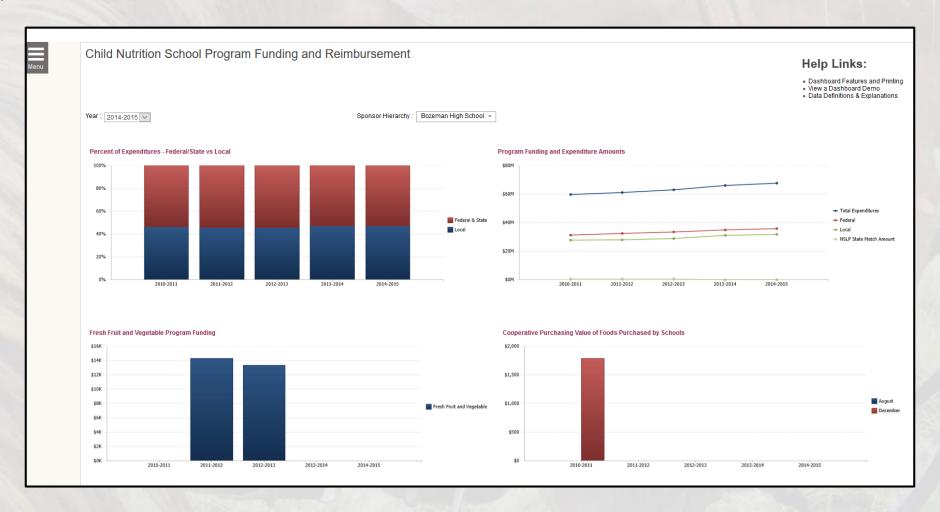
Lesson: before you visit, click it!

You are teaching in Bozeman High School. Bozeman has a playoff Basketball game with Butte, another AA team. With your class compare the two schools on the basis of the GEMS school profile.

- Which one is the richest/poorest district (most/least % of students in poverty)?
- Which school has the best graduation rate?
- How many students are in each school?

What other data points would you like to see on a school profile?

Child nutrition is one of the largest line items in a school district's budget. How much do the schools you visit spend in comparison to state/federal contributions?

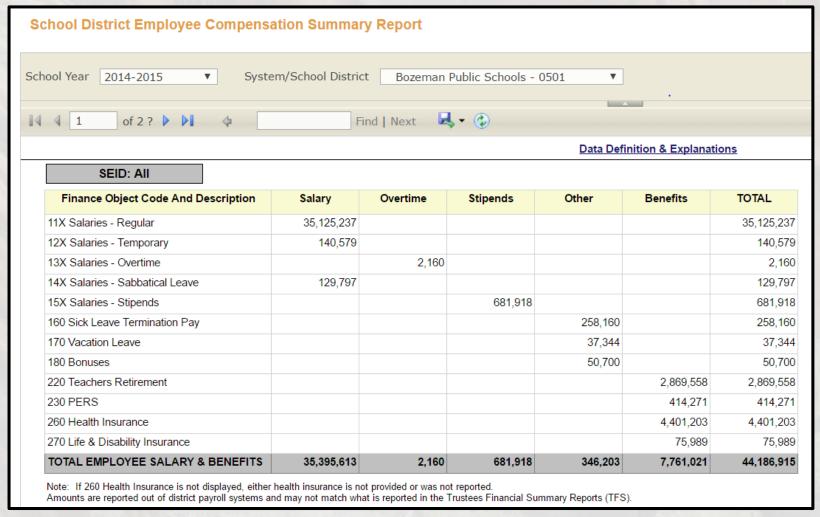


Lesson: how much do the schools you visit spend in comparison to state/federal contributions?

Compare the relationship between the how much the school district, state, and federal government fund the total cost of meal programs.

- How much was spent locally on these meals?
- How many meals (lunch) were served in the high school?

How much does the workforce cost in the schools you visit (Bozeman)?



Lesson: How much does the workforce cost in the schools you visit?

- Randomly select 3 Class AA schools with similar student populations (number and economically disadvantaged), which schools spends the most on salaries (per pupil)?
- Is there variation in the cost of benefits between schools?

How do you target students at risk of dropping out of high school for services?

	Use	ourr	igoro	ous <u>Ear</u>	ly V	<u>Var</u>	ning	Syst	er	<u>n</u> .										
SC	School Name	Last Name	First	StateID	HS	Grade	Dropout	Change	Est.	Attendance	Grades	Behavior	Age	Off	Mobility	Previous	Previous	Behavior	Attendance	(
			Name		Years		Prob.							Track		Dropout	Prob.	Odds	Odds	(
ABCD	Early Warning	Anderson	Joel	DJFHDFIEF	4	12	99.8%			Attendance	Grades			Off	Mobility	Prev	99.8%	1.00	41.45	
	System School													Trook		Drangut				

System School

System School

Early Warning

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ABCD Early Warning

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Thompson Jess

ABCD Early Warning

ABCD

ODJEHDYST 1

DYSYDHEGD 1

UDJEHEGDB N/A

MSJDHEYDG N/A

NSHDHEYRG N/A

Thomas

Mary

Shane

Jane

09

09

70.2%

1.8%

81.6%

8.3%

76.5%

														•					
ABCD	Early Warning	Anderson	Joel	DJFHDFIEF	4	12	99.8%		Attendance	Grades		Off	Mobility	Prev	99.8%	1.00	41.45	61.25	2
	System School											Track		Dropout					
ABCD	Early Warning	Smith	Maria	JDUEHJDH	4	12	0.1%		Attendance						0.1%	1.00	1.89	0.32	1
	System School																		
ABCD	Early Warning	Lackey	Edin	BGSFWFED	3	11	9.6%	1	Attendance		Age				24.0%	1.00	2.80	0.78	1
	System School																		

Grades Mobility Odds Odds

2.21

ABCD	Early Warning	Smith	Maria	JDUEHJDH	4	12	0.1%		Α	ttendance			0.1%	1.00	1.89	0.32	1.00
	System School																
ABCD	Early Warning	Lackey	Edin	BGSFWFED	3	11	9.6%	1	A	ttendance	Age		24.0%	1.00	2.80	0.78	1.00
	System School																
ABCD	Early Warning	Underman	Hal	IKJJHYGVX	3	11	6.1%	<i></i>	А	ttendance		Mobility	3.0%	1.22	3.23	0.57	3.19
	System School																
ABCD	Early Warning	Grossman	Keith	JSUWEHDBH	2	10	3.9%		А	ttendance			3.8%	1.06	1.49	0.28	1.00
	System School																
						F											

11.505				200: ::: 22	•	1	0.070	•	,		7.90			, ,			••	
	System School																	
ABCD	Early Warning	Underman	Hal	IKJJHYGVX	3	11	6.1%	<i></i>	Attendance			ı	Mobility	3.0%	1.22	3.23	0.57	3.19
	System School																	
ABCD	Early Warning	Grossman	Keith	JSUWEHDBH	2	10	3.9%		Attendance					3.8%	1.06	1.49	0.28	1.00
	System School																	
ARCD	Farly Warning	Plaver	Joe	LIUJHHUUS	2	10	0.4%							0.2%	1 00	0.83	0.21	1 00

	System School																
ABCD	Early Warning	Underman	Hal	IKJJHYGVX	3	11	6.1%	<i></i>	Attendance			Mobility	3.0%	1.22	3.23	0.57	3.19
	System School																
ABCD	Early Warning	Grossman	Keith	JSUWEHDBH	2	10	3.9%		Attendance				3.8%	1.06	1.49	0.28	1.00
	System School																
ABCD	Early Warning	Plaver	Joe	IJUJHHUUS	2	10	0.4%						0.2%	1.00	0.83	0.21	1.00

Attendance

Attendance

Attendance

Attendance Grades

Attendance Grades Behavior

Off

Behavior Age

Age

Track

59.8%

2.1%

69.0%

6.4%

97.8%

2.92

1.00

1.32

1.00

1.00

2.95

2.40

2.28

2.37

3.59

6.14

0.12

1.00

0.35

8.46

1.00

1.00

1.00

1.00

1.00

Lessons: How do you target students at risk of dropping out of high school for services?

The EWS works with student level data for each participating school.

- Investigate how many students in a school should be identified as at-risk of dropping out of high school?
- How does this compare to schools of similar sizes and/or have a similar percentage of students in poverty?
- How would you incorporate the EWS into a 360 degree evaluation of the student's case?

GEMS Research: The Effectiveness of the SBAC Interim IAB Assessments



Background

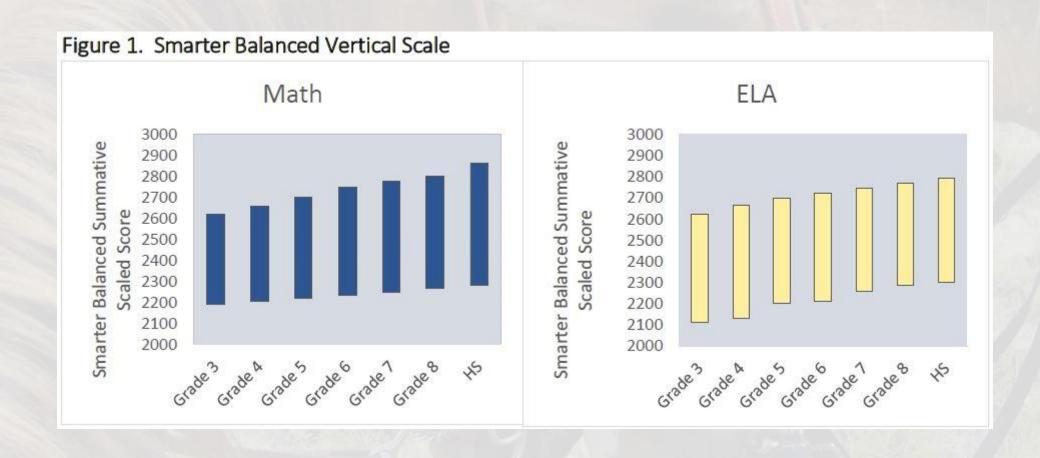
- Two Kinds of Interim Assessment: Interim Assessment Blocks and Interim Comprehensive Assessment
- The assessment content is the same in the blocks as in the summative.
- There are two ways to administer the assessment: standardized and nonstandardized.



STANDARDIZED ADMINISTRATION = ASSESSMENT OF LEARNING AND ASSESSMENT FOR LEARNING

NONSTANDARDIZED ADMINISTRATION = ASSESSMENT FOR LEARNING

This study focuses on scale scores



Student Count by Grade Level

Table 2: Student Count and Relative Intensity by Grade Level

Grade	Student Count	ELA Opportunity	Math Opportunity
2	11	5	0
3	2841	3475	6191
4	2866	3775	6217
5	2248	3150	5408
6	1725	3455	3464
7	1515	2131	3026
8	1285	1473	2079
Total	12491	17464	26385

Table 3: 3rd Grade Growth IAB to SBAC Summative - ELA1

	N	Mean IAB	Mean Summative	Mean Diff	Std. Deviation	Std. Error Mean	t	df	Sig. (2- tailed)
G3Edit	600	2411.29	2447.03	35.74	96.01	3.92	-9.12	599	0.000
G3Listen	542	2428.02	2433.85	5.83	75.36	3.24	-1.80	541	0.072
G3Opinion	73	2229.53	2442.97	213.44	146.17	17.11	-12.48	72	0.000
G3ReadInfo	164	2361.32	2415.51	54.19	111.49	8.71	-6.22	163	0.000
G3ReadLit	176	2352.26	2447.52	95.27	113.08	8.52	-11.18	175	0.000
G3Research	218	2425.14	2447.98	22.84	70.34	4.76	-4.79	217	0.000
G3Revision	235	2447.24	2471.40	24.15	80.59	5.26	-4.59	234	0.000
G3Vocab G3Writes ²	1152	2424.86	2428.24	3.38	76.06	2.24	-1.51	1151	0.132

ELA Summary

- In the early years, Vocab is the most popular IAB. However, Vocab isn't as effective as other IABs in producing gains on the SBAC Summative.
- Read Literature, Read Informational Texts, Research, and Revision show consistent gains across grade levels.
- When looking across all grade levels there are 29 meaningful differences (out of 39 IAB grade level tests).

Table 8: 8th grade Growth IAB to SBAC Summative -Math

	N	Mean Interim	Mean Summative	Mean Diff	Std. Deviation	Std. Error Mean	t	₫ţ	Sig. (2- tailed)
G8M- Expressions and Equations	621	2569.67	2560.01	-9.66	98.17	3.94	2.45	620	0.014
G8M- EXpressions and Equations II	134	2557.03	2592.19	35.16	104.04	8.99	-3.91	133	0.000
G8M-Functions	293	2586.01	2577.36	-8.65	114.29	6.68	1.30	292	0.196
G8M- Geometry	292	2618.50	2569.83	-48.67	136.11	7.97	6.11	291	0.000
G8M-Number System	269	2558.53	2579.71	21.19	121.41	7.40	-2.86	268	0.005
G8M- Performance ⁴									

Math Summary

- Trends are mixed across grade levels.
- 8th grade math differences were strong. The effect size was moderate.
- For third grade, geometry is not significant, but at the other grade levels it is significant.
- The IABs that are the most popular also often prove to produce meaningful change in test scores.
- 20 grade level blocks had meaningful differences (out of 35).

Please come back to GEMS, there are loads of new tools!

Contact Information

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406-444-3793

